THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SCOTT A. ELROD, BUTRUS T. KHURI-YAKUB and CALVIN F. QUATE

Appeal No. 95-4864
Application 07/890,995[1]

ON BRIEF

Before THOMAS, KRASS, and JERRY SMITH, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 5, constituting all the claims in the application.

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[1] Application for patent filed May 29, 1992.

The invention is directed to the stabilization of the free surface of a liquid. More particularly, the invention seeks to establish a stable free surface in an acoustic ink printer. Stabilization is achieved by applying substantially the same energy into the acoustic transducer during each time period, but with different characteristics in time periods in which a droplet is ejected as compared to time periods in which a droplet is not ejected.

Independent apparatus claim 4 is reproduced as follows:

4. An apparatus for stabilizing the spatial location of the free surface of a liquid against variations in the acoustic impulse induced rate of droplet ejection from the free surface of the liquid, the apparatus comprising:

a transducer for converting input electrical energy into acoustic radiation;

means for focusing said acoustic radiation into an area near the free surface of the liquid;

a time base for segmenting time into a plurality of ejection periods;

means for ascertaining if a droplet is to be ejected in each of said ejection periods; and

a driver operatively connected to said ascertaining means and to said transducer, said driver for inputting electrical energy to said transducer to create an impulse of acoustic radiation sufficient to cause droplet ejection from the free surface of the liquid in each of said ejection periods in which a droplet is to be ejected, said driver further for inputting electrical energy to said transducer sufficient to cause substantially the same acoustic radiation to be directed toward the free surface of the liquid, but with impulse characteristics insufficient to cause droplet ejection in each of said ejection periods in which a droplet is not to be ejected.

The examiner relies on the following references:

Juliana et al. (Juliana)	4,266,232	May 5, 1981
Elrod et al. (Elrod)	5,122,818 (Filed	Jun. 16, 1992 Apr. 5, 1991)
European Patent Application (EP)	0 273 664	Jul. 6, 1988

Claims 1 through 5 stand rejected under 35 U.S.C. 103 as unpatentable over EP in view of Elrod and Juliana. Additionally, in a new ground of rejection applied for the first time in the answer, the examiner rejects claims 1 through 3 under 35 U.S.C. 112, second paragraph.

Reference is made to the brief and answer for the respective details of the positions of appellants and the examiner.

OPINION

At the outset, we note that, in the answer, the examiner has entered a new ground of rejection against claims 1 through 3 under 35 U.S.C. 112, second paragraph. Since the rejection appears, at first blush, not unreasonable and appellants have chosen not to respond to such rejection, the appeal as to claims 1 through 3 is dismissed.

Accordingly, the rejection before us on appeal is that of claims 4 and 5 under 35 U.S.C. 103.

We will not sustain the rejection of claims 4 and 5

under 35 U.S.C. 103 based on the evidence provided by the applied references.

The examiner cites EP to show a conventional acoustic ink printing apparatus but recognizes that the instant claims differ therefrom by providing a means for ascertaining if a droplet is to be ejected and driving the transducer with the same energy whether or not a droplet is to be ejected but with different impulse characteristics depending on whether or not a droplet is to be ejected. The examiner then brings in Elrod to teach the importance of stable free surfaces and relies on Juliana for the teaching of employing two different drive pulses for driving a transducer, the amplitude of the driving pulse being dependent on whether or not a drop is to be ejected.

Appellants admit [page 6 of the brief] that EP discloses an acoustic ink printer having the elements cited by the examiner, that artisans would know how to operate a controller for such an acoustic ink printer with segmented time periods and that Elrod teaches the importance of stable free surfaces. However, appellants dispute the relevance of Juliana in finding the claimed subject matter obvious under 35 U.S.C. 103.

While we disagree with appellants' apparent contention that Juliana does not constitute analogous art, since Juliana is directed to ink printers which use transducers, albeit

electromechanical, to eject a drop of ink, we agree with appellants that neither Juliana, nor the other applied references, discloses or suggests the latter part of the subject matter recited in claim 4, i.e., that the same acoustic radiation is to be directed to the free surface of the liquid, whether or not a droplet is to be ejected, but "with impulse characteristics insufficient to cause droplet ejection in each of said ejection periods in which a droplet is not to be ejected."

Juliana certainly discloses the generation of a drive pulse whether or not a droplet is to be ejected, wherein the drive pulse is at a lower amplitude when no drop is to be ejected than the amplitude when a drop is to be ejected. However, there is no disclosure or suggestion in Juliana of employing an impulse of substantially the same energy or radiation but with different impulse characteristics. Juliana changes only the amplitude of the drive pulse which would appear to indicate that the amount of energy is different (the lower amplitude pulse generating less energy) for the drive pulses used during drop ejection than for the drive pulses used during no drop ejection. Accordingly, the claimed subject matter is not taught or suggested by the applied references.

The examiner's decision rejecting claims 4 and 5 under 35 U.S.C. 103 is reversed. The appeal as to claims 1 through 3 is dismissed.

Accordingly, the examiner's decision is reversed.

REVERSED

JAMES D. THOMAS
Administrative Patent Judge)

ERROL A. KRASS
Administrative Patent Judge) BOARD OF PATENT APPEALS AND INTERFERENCES

JERRY SMITH
Administrative Patent Judge)

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